

REMARKS

The presently claimed invention relates to a tire for heavy off-the-road vehicles in which a crown reinforcement comprises a particular combination of plies, namely:

- at least two working crown plies of inextensible metallic cables crossed from one ply to the next, the plies having widths at least equal to 50% of the width L of the tread and,
- two protection crown plies located radially outwardly of the working plies and comprising elastic metallic cables crossed from one ply to the next.

In addition, the tread comprises, in its ungrooved portion of thickness D, at least one armature of reinforcement elements, wherein the armature is comprised of at least two layers of textile monofilaments arranged parallel to one another in each layer, the axial widths of the said two layers being at least equal to the width of the narrower working ply.

Claim 1, which recites that combination of features, was rejected as being obvious over *Sato et al.* in view of *Cordonnier* and *Tsuruta et al.* *Sato et al.* discloses a crown reinforcement (fig. 3) with six layers which include (from the inside to the outside of the tire):

- two layers (35, 36) which are not disclosed as made of inextensible metallic cables.
- two layers (37, 51) which are not disclosed as made of elastic metallic cables,

- two layers (38, 52) which are not disclosed as two layers of textile monofilaments, whose axial widths of the said two layers are at least equal to the width of the narrower working ply which means in *Sato et al.* at least equal to the width of the narrower layer of the two layers 35, 36.

In the Official Action, it was deemed obvious to modify the reinforcement of *Sato et al.* by making the layers 35, 36 of inextensible steel and the layers 37, 51 of elastic steel, in view of *Cordonnier*, and to make the layers 38, 52 of textile monofilaments in view of *Tsuruta et al.*

As explained below, applicants do not agree that the combination of prior art features would have been obvious. Regardless, however, even after the proposed modifications have been made, the presently claimed invention would not result, because the layer 52 of *Sato et al.* is narrower than the layer 35 which is the narrower of layers 35, 36, rather than being at least equal to the width of the layer 35 as called for in claim 1.

Furthermore, as regards the proposed combination of prior art features, it should be noted that the reinforcing layers of a tire are selected so as to work together to achieve particular results. Thus, for example, *Sato et al.* employs a particular pattern of six layers, apparently all formed of the same material (only "steel" being specified in *Sato et al.*). There is no suggestion of forming the layers of three different materials as presently claimed. *Cordonnier* discloses the use of two different materials, i.e., inextensible steel and elastic steel, but only provides one layer 34 of elastic steel. Where, then, is the motivation to form two of the layers of *Sato et al.* of elastic steel? *Tsuruta et al.* discloses a number of reinforcement layers

and states that the reinforcing elements 24, 25, 32 and 37 can be formed of steel cord, or aramid fiber cord, or monofilament thereof (see col. 5, lines 37-39 and 58-60; and col. 6, lines 7-9). Within the "teachings" of *Tsuruta et al.* it is possible for all of the fibers in the tire to be formed of the same material; *Tsuruta et al.* does not disclose or suggest that different materials, let alone three different materials should be used. There is no teaching in either *Cordonnier* or *Tsuruta et al.* which would motivate an artisan to modify the tire of *Sato et al.* such that there results a plurality of non-extensible metallic layers, a plurality of elastic metallic layers, and a plurality of textile monofilament layers. Such a combination is missing from each of the three applied references, and it submitted that one could only find a teaching to combine those references in a manner arriving at the presently claimed invention by following the present applicants' teachings.

In sum, the combination of features defined by claim 1 has been selected to achieve a specific performance, and there is no suggestion of that combination in the cited prior art.

In light of the foregoing, it is submitted that the application is in condition for allowance.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

Date: February 22, 2005

By: 

Alan E. Kopecki

Registration No. 25,813

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620